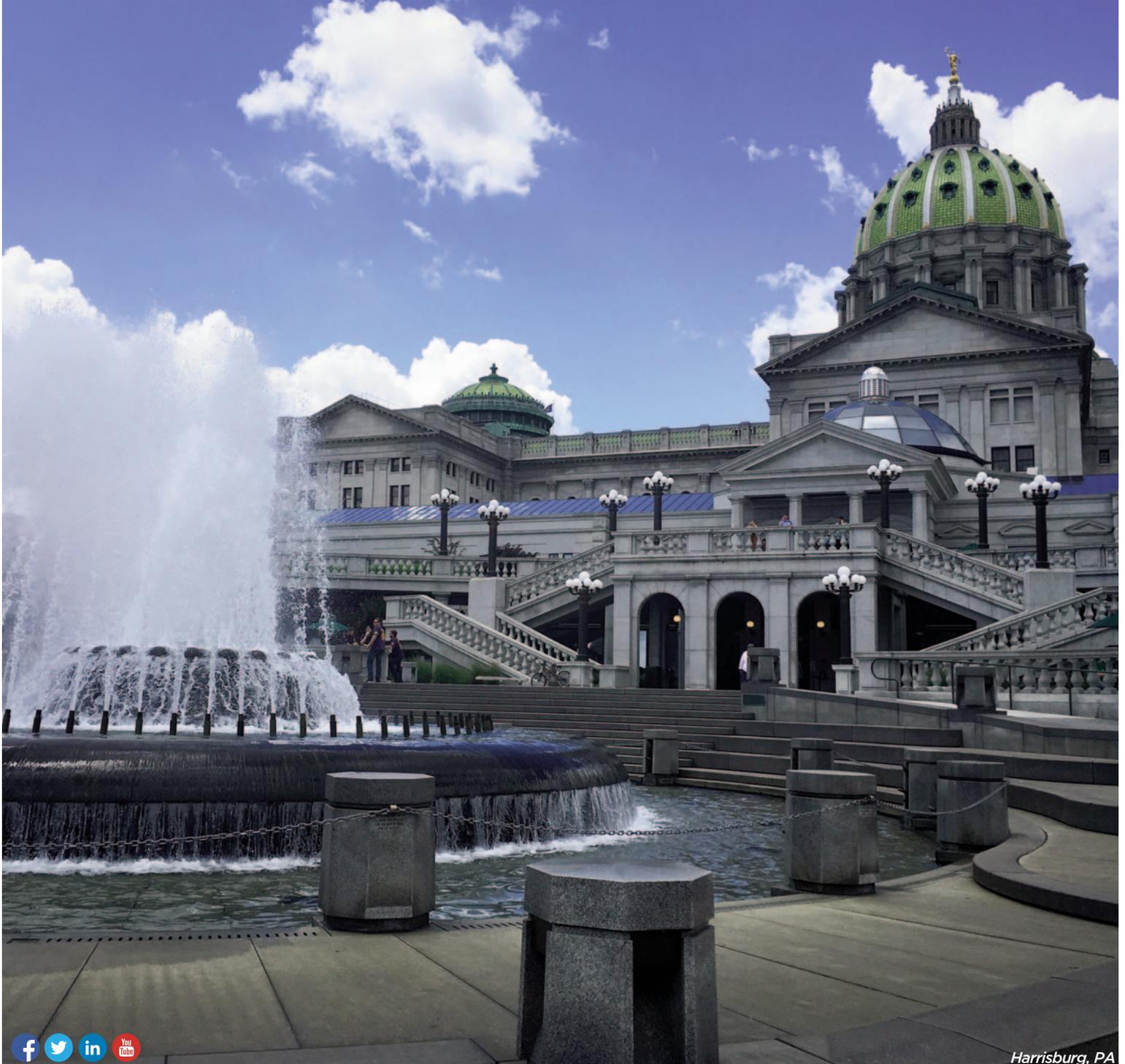


TECHNICAL INFORMATION ON FLOODPLAIN MANAGEMENT PLANNING SERIES #5

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I. Technical Information on Floodplain Management

Preface

Technical Information on Floodplain Management (Planning Series Publication #5) is one of a series of 10 planning publications produced by the Governor's Center for Local Government Services (Center) as a means to educate both professionals and non-professionals on the ways that planning and land use management are achieved within the commonwealth. The planning publications were first developed in the 1970s and in subsequent editions have been revised to incorporate differences in the overall planning viewpoint, offer up-to-date best practices, and reflect the latest changes in Pennsylvania planning law.

The Center's 10 Planning Series Publications are as follows:

- No. 1 – Local Land Use Controls in Pennsylvania
- No. 2 – The Planning Commission
- No. 3 – The Comprehensive Plan
- No. 4 – Zoning
- **No. 5 – Technical Information on Floodplain Management**
- No. 6 – The Zoning Hearing Board
- No. 7 – Special Exceptions, Conditional Uses and Variances
- No. 8 – Subdivision and Land Development in Pennsylvania
- No. 9 – The Zoning Officer
- No. 10 – Reducing Land Use Barriers to Affordable Housing

The Technical Information on Floodplain Management publication is specifically designed for the following purposes:

- To address the regulatory authority and requirements for implementing the National Flood Insurance Program and Pennsylvania Flood Plain Management Act 166 of 1978;
- To explain the steps involved with determining the 1% annual chance flood and regulating development in the floodplain; and
- To outline additional resources available for floodplain management at the commonwealth and federal level.

II. Introduction

The National Flood Insurance Program (NFIP), including the Code of Federal Regulations, 44 CFR Chapter I, Subchapter B (Insurance and Hazard Mitigation), administered by the Federal Emergency Management Agency (FEMA) is a voluntary program based on a mutual agreement between the federal government and the participating community. Federally-backed flood insurance coverage is available to any property owner in return for mitigation of flood risks by community regulation of floodplain development. The NFIP also supports subsidized insurance protection for flood-prone properties. The insurance protection is coupled with the local floodplain management to limit building in floodplains and promote safer building in floodplains. The NFIP develops and provides maps that show the probability of a flood occurring in any given year. These Flood Insurance Rate Maps (FIRMs) are the regulatory basis for local floodplain management. Since 2005, there has been a national effort to digitize the maps by creating Digital Flood Insurance Rate Maps (DFIRMs). DFIRMs may be used in a geographic information system (GIS) to view floodplains over other map layers. GIS is a helpful tool to view buildings, critical facilities, and other resources in relation to the floodplain. Floodplain management is a multi-tiered effort between the federal, state, and local government. FEMA nationally updates DFIRMs, sets regulations for implementing the NFIP, provides technical assistance, and monitors implementation and compliance. Pennsylvania sets regulations, reviews draft ordinances, provides technical assistance, and monitors implementation and compliance. Pennsylvania municipalities are responsible for implementing floodplain management regulations through their ordinances, zoning, and building permits.

Pennsylvania enacted the Pennsylvania Flood Plain Management Act, Act 166 of 1978, 32 P.S. § 679.101 et seq., and promulgated regulations found in Chapter I, Subchapter 113 of Title 12 of The Pennsylvania Code (Commerce, Trade and Local Government), 12 Pa. Code §§ 113.1 -113.11, for the management of development in flood-prone areas. The Pennsylvania Flood Plain Management Act recognizes the importance of the NFIP in the Commonwealth by requiring municipalities with FEMA mapped floodplains to participate in the NFIP. Municipalities participate by adopting an ordinance that meets or exceeds the minimum standards of the NFIP for floodplain management. The Pennsylvania Flood Plain Management Act also appoints the Department of Community and Economic Development (DCED) as the State NFIP Coordinator with responsibility for reviewing ordinances and providing technical assistance to support local participation in the program. The Pennsylvania Flood Plain Management Act also contains procedural and substantive requirements in addition to those imposed under the NFIP.

DCED supports floodplain management with additional resources, including a website at www.pafloodmaps.com, and guides including this one for Technical Information on Floodplain Management. This guide covers essential information for floodplain management in the commonwealth.

Homeowner Flood Insurance Affordability Act of 2014

The Homeowner Flood Insurance Affordability Act, Public Law 113-89 (HFIAA), was signed into law by President Obama on March 21, 2014. This law modifies and repeals parts of the Biggert-Waters Flood Insurance Reform Act of 2012, Public Law 112-141 (BW-12). HFIAA also legislates additional program changes that were not covered in BW-12.

Together HFIAA and BW-12 work to increase the financial solvency of the NFIP by increasing insurance rates. BW-12 planned to increase subsidized insurance rates by 25% annually until full-risk rates were reached. The increases planned in BW-12 were reduced and rolled back by HFIAA to help maintain affordability for insurance premiums. For instance, HFIAA caps annual increases at 18% and reduces increases to 5% annually on structures built prior to FIRMs, known as Pre-FIRM structures. The result of both BW-12 and HFIAA is that owners of properties in the floodplain should expect insurance premiums to increase over time. For more information visit FEMA's website at: <http://www.fema.gov/flood-insurance-reform>. Municipalities that manage the NFIP at the local level will see increased interest in activities that reduce premiums, including mitigation and participation in the Community Rating System (CRS). CRS is a voluntary FEMA program that allows municipalities to implement floodplain management practices that exceed the national minimum standards to reduce flood insurance premiums by 5-45 percent. See <http://www.fema.gov/national-flood-insurance-program-community-rating-system> for more information.

Sound floodplain management practices are beneficial to communities regardless of the impact on insurance fees. Communities that implement sound floodplain management discussed in this guide will prevent and mitigate flood losses and protect residents, business owners, and the natural environment. The practices will protect property and may also help to maintain or reduce insurance costs in an environment where insurance costs are projected to increase.

The following sections outline activities in floodplain management. The guide starts with a summary on local floodplain management. This is followed by sections for using the FIRMs to determine the floodplain, regulating development in the floodway, permitting, elevation, flood-proofing, addressing the unique concerns of manufactured homes, and correctly granting and denying variances. The final sections address the Pennsylvania Flood Plain Management Act and examples of real world permitting issues that bring the lessons of this guide all together.

III. Local Floodplain Management

In Pennsylvania, the entities that participate in the NFIP are municipalities. Municipalities are responsible for implementing local ordinances to recognize the requirements of the NFIP and Pennsylvania Flood Plain Management Act. Counties often support municipalities with technical assistance and coordination. DCED acts as the State NFIP Coordinating office providing technical assistance, reviewing ordinances, providing guidance, and reviewing compliance with the NFIP.

Floodplain management requirements have flood insurance implications. The issuance of policies, the determination of premium rates, and the honoring of future claims depend greatly upon compliance with the NFIP. Compliance includes where and how structures are built and remodeled and whether structures are elevated to the regulated height or flood-proofed. A structure built in violation of NFIP floodplain management requirements could be declared ineligible for flood insurance. This would not only prevent the owner from obtaining insurance coverage, but it would also severely hinder the resale of the property, since most banks and lending institutions require flood insurance coverage as a condition for obtaining a mortgage for a flood-prone property. At the very least, if a flood insurance policy could be issued for a structure in violation, the annual premium rate would be significantly higher than for a structure built in conformance with the regulations. Finally, allowing structures not in compliance with the NFIP can impact a municipality's participation in the NFIP and CRS, thus impacting insurance rates for the entire community.

Pennsylvania Flood Plain Management Act

Besides the NFIP requirements, municipalities must also administer two additional sets of provisions required as a result of the Pennsylvania Flood Plain Management Act. Additional details on the Pennsylvania Flood Plain Management Act are found in a following section named for this topic. However, summary here helps understand the context for floodplain management in the commonwealth.

A municipality must take special precautions when regulating the design and construction of jails, hospitals, nursing homes, and manufactured home parks. Of particular note is the requirement that these types of buildings be constructed so that the lowest floors are elevated one and one-half (1½) feet above the 1% annual chance flood level. This extra measure of protection is termed a freeboard and is an added margin of safety against errors in the flood information and potentially higher flood levels caused by future watershed development.

In addition, structures used for the production, storage, or maintenance of a supply of 18 specific substances considered particularly dangerous when located in a floodplain must either be constructed with the lowest floor elevated one and one-half feet above the 1% annual chance flood elevation or be constructed to remain completely dry up to that height.

Ordinances

Ordinances that reflect the NFIP and Pennsylvania Flood Plain Management Act may be implemented as special purpose floodplain ordinances or as part of a zoning ordinance or subdivision and land development ordinance (SALDO). Most commonly in Pennsylvania municipalities have a special purpose floodplain management ordinance. DCED provides model floodplain ordinance provisions at: dced.pa.gov/local-government/pennsylvania-flood-maps. The model floodplain provisions should be adapted to the FIRM mapping for a municipality and ensure compliance with the minimum standards for the NFIP and Pennsylvania.

More Restrictive Regulations

Municipalities must comply at a minimum with the NFIP and Pennsylvania Flood Plain Management Act to continue participation in the NFIP. Municipalities have the option of enacting and administering local regulations that are more restrictive than the minimum federal requirements or the minimum state requirements. For example, a municipality may prohibit the placement of buildings and structures in the floodplain altogether or require that they be elevated to the 0.2% annual chance flood level. In such circumstances, the municipality must have sufficient support for the more restrictive standard, which may be neither excessive nor unreasonable. Where the municipal ordinance is more restrictive than the federal or state requirement, then the more stringent regulations would be applied. The practice of enacting more stringent regulations prevents loss, protects floodplains for their ecological value, and creates a safer environment for residents. Municipalities interested in obtaining more restrictive model provisions should consult DCED.

IV. Determining the 1% Annual Chance Flood Elevation

For a municipality to participate in the National Flood Insurance Program, it must enact an ordinance to regulate future construction and development in areas subject to the 1% annual chance flood. Buildings and other structures proposed within the floodplain must be either elevated or flood-proofed to or above the elevation of the 1% annual chance flood. Other types of development such as water and sewer facilities and other utilities must be designed to minimize or prevent flood damage when located below the 1% annual chance flood elevation.

Since the 1% annual chance flood is the basis for regulating construction and development, it is necessary that the elevation of the 1% annual chance flood be established for each and every activity proposed within the floodplain. The ease and accuracy of determining the 1% annual chance flood elevation will depend on the type of maps and flood information available to a given municipality.

1% Annual Chance versus 100-year Flood

In BW-12, Congress changed terminology in the law from the phrase “100 year flood” to the phrase the “1% annual chance flood.” Referring to the “100-year flood” provided people a false sense of security and false understanding of the floodplain. The term 100-year flood suggests that the flood of that size will happen only every 100 years or that if a flood of that size happened last year it will not happen again this year. The fact is that floodplain shows the area that has a 1% chance of happening in any year. So, even if there was a 1% annual chance flood last year, there is still a 1% chance a flood of that size could happen again this year. The following terms are equal:

- 10% annual chance flood = 10-year flood
- 2% annual chance flood = 50-year flood
- 1% annual chance flood = 100-year flood
- 0.2% annual chance flood = 500-year flood

However, using “% annual chance flood” is viewed as a clearer and more informative way to describe the floodplain.

Digital Flood Insurance Rate Map (DFIRM)

Every county in Pennsylvania has a Preliminary or Effective Digital Flood Insurance Rate Map (DFIRM). The DFIRM shows the delineation of the 1% annual chance flood and the floodway and Base Flood Elevations (BFEs) along areas with detailed studies. The DFIRM may also display the 0.2% annual chance flood along some reaches of streams. The DFIRM is coupled with a Flood Insurance Study (FIS). The FIS describes the analysis that went into the study to complete the floodplain delineations and provides additional details in flood profiles of certain stream reaches. A flood profile is a graph that shows the elevation of a particular flood or floods along a stretch of stream, which has been studied in detail. The profiles prepared by FEMA indicate the distance along the stream in feet and the elevation of the 10%, 2%, 1%, and 0.2% annual chance floods in feet above mean sea level.

Base Flood Elevation (BFE)¹

The BFE is the elevation to which floodwater will rise during a base flood, a flood that has a one percent chance of occurring annually. This is the regulatory standard also referred to as the “100-year flood.” The base flood is the national standard used by the National Flood Insurance Program (NFIP) and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. BFEs are typically shown on Flood Insurance Rate Maps (FIRMs).

¹Base Flood. Federal Emergency Management Agency. Retrieved July 25, 2014 from <http://www.fema.gov/national-flood-insurance-program/base-flood>

Typical floodplain types in Pennsylvania are A and AE zones. These zones are defined below:

- **Zone A:** Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no BFEs or flood depths are shown. Mandatory flood insurance purchase requirements apply.
- **Zones AE:** Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown within these zones. Mandatory flood insurance purchase requirements apply. (Zone AE is used on new and revised maps in place of Zones A1–A30.)

Information on additional zones and the NFIP in general is available in FEMA's answers to Questions about the NFIP at: <http://www.fema.gov/media-library/assets/documents/272>.

To determine the 1% annual chance flood elevation for a proposed activity using the flood profiles, first locate the site on the DFIRM. Select the nearest cross section on the map and measure from that line down the center of the stream to a point adjacent to the site using the approximate scale shown on the DFIRM or using GIS. With this distance converted into feet, find the corresponding cross section symbol along the bottom of the flood profile chart and measure out to this distance and mark. Locate this point on the profile of the 1% annual chance flood and determine the elevation of the point from the vertical scale on the left hand column of the graph.

Once the 1% annual chance flood elevation is determined using the map and profile; it is a matter of establishing a reference elevation at or near the site. Reference marks with elevations to the nearest 1/100 of a foot are provided on the DFIRM. These can be used as starting points to establish nearby elevations through the use of a level or other comparable equipment.

It should also be noted that not all flood-prone streams in municipalities with DFIRMs are mapped in detail. Many DFIRMs include approximate delineations of some floodplain areas. Neither flood profiles nor floodway delineations are provided for such areas. The next section describes how to address floodplain management in these areas.

Use of the Best Available Information

Municipalities that have maps with approximate delineations of the 1% annual chance floodplain are required by FEMA to use better flood elevation data whenever such data is available from other sources. Agencies such as the U.S. Army Corps of Engineers, the Soil Conservation Service, U.S. Geological Survey (USGS), and the Pennsylvania Department of Environmental Protection (DEP) may have information on file that may help a municipality establish a 1% annual chance flood elevation for a particular site.

One source of information that is particularly helpful is the Flood-Prone Quadrangle Maps prepared by the USGS. These are standard topographic maps that show an approximate delineation of the 1% annual chance floodplain. The topography of the area is shown through the use of 20-foot contour lines. The contour and elevation reference points which are frequently located on the topographic quads can be used to help estimate the 1% annual chance flood elevation. While a 20-foot interval between contours seems to leave a lot of room for error, quite often this can be narrowed down significantly by sizing up the area with a field inspection.

In some instances, it may be possible to use historical flood information as a basis for determining flood elevations. The height of past floods may be obtained from newspaper articles, recorded high water marks, or from residents who remember the extent of major flooding. The problem with using historical information is the difficulty in relating the frequency of occurrence of specific flood events. Unless the magnitude of a previous flood can be verified as being close to a 1% annual chance flood, caution should be used in applying the data. This is particularly true if the historical information is for a flood that covered a smaller area than that which is shown as the 1% annual chance floodplain on a FEMA map.

The County Soil Survey Reports prepared and published by the Natural Resource Conservation Service (NRCS) can be very helpful, too. Each report provides a description of the various soil classifications found throughout the county and includes aerial photographs showing the location of each soil type. Alluvial soils, those derived from material deposited by running water, often include various types of soils prone to flooding. When found adjacent to rivers and streams, the boundary of alluvial soils in conjunction with a USGS Flood-Prone Quadrangle Map and/or FIRM can be used to obtain a reasonable estimate of the 1% annual chance flood elevation. In addition, the NRCS flood elevation information for watersheds with projects funded through the Watershed Protection and Flood Prevention Act (PL-566) program, Floodplain Information Studies, Flood Control Reports, and general file information prepared by U.S. Army Corps of Engineers (USACE) District Offices are excellent sources of flood data. Note: USACE Districts may provide specialized or technical services to state or local governments under Section 6505 of Title 31, United States Code, in accordance with Section 211 of the Water Resources Development Act of 2000 (PL 106-541) as amended by Section 109 of the Energy and Water Development Appropriations Act of 2002 (PL 107-66).

The PA DEP has flood elevation data for those stream segments for which flood control feasibility studies were prepared. When constructing new bridges and culverts, the Pennsylvania Department of Transportation (PENNDOT) prepares hydraulic reports, which often include information concerning 1% annual chance flood discharges.

Some municipalities require an applicant to obtain the services of a professional engineer to determine the 1% annual chance flood elevation. This is entirely acceptable provided that the methods used to perform the hydrologic and hydraulic calculations are appropriate.

Determining flood elevations for development in these approximate flood areas can be accomplished using the methods described above. Free software is also available to use with the DFIRM. The software and additional information may be found at: <http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineers-surveyors-and-architects-frequently>

Contacts for Flood Elevation Information

Floodplain Management Services, U.S. Army Corps of Engineers

Delaware River Basin

Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

(215) 656-6500
www.nap.usace.army.mil

Ohio River Division

William S. Moorehead Federal Building
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

412-395-7100
www.lrp.usace.army.mil

St. Lawrence Drainage

1776 Niagara Street
Buffalo, New York 14207

(716) 879-4143
www.lrb.usace.army.mil

Susquehanna and Potomac River Basins

City Crescent Building
10 South Howard Street
Baltimore, MD 21201

(410) 962-4223
www.nab.usace.army.mil

Natural Resources Conservation Services (NRCS), U.S. Department of Agriculture

*For county soil survey information, contact the county Conservation District office listed at:
<http://pacd.org/your-district/find-your-district/>.*

For Flood Control Data:**Pennsylvania NRCS State Office**

One Credit Union Place, Suite 340
Harrisburg, PA 17110-2993

(717) 237-2100
www.pa.nrcs.usda.gov
www.nrcs.usda.gov

Geologic Survey (USGS), U.S. Department of Interior

For floodplain information reports and flood prone quadrangle maps:

Pennsylvania Water Science Center

215 Limekiln Road
New Cumberland, PA 17070

(717) 730-6900
<http://pa.water.usgs.gov/>

Bureau of Waterways Engineering and Wetlands, PA Department of Environmental Protection

Mailing Address: PO Box 8460
Harrisburg, PA 17105-8460

Onsite Address: 400 Market Street, 3rd Floor Rachel Carson State Office Building,
Harrisburg, PA 17101

Telephone: 717-787-3411

Web: http://www.portal.state.pa.us/portal/server.pt/community/waterways_engineering/10499

Engineering District, PA Department of Transportation

*For bridge and culvert hydraulic information, contact the local Engineering District Office listed at
<http://www.dot.state.pa.us/internet/web.nsf/RegionalMap> or contact:*

Highway Delivery Division

Keystone Building
400 North Street
Harrisburg, PA 17120

(717) 214-4035
www.dot.state.pa.us

Using the Maps

If there is no better information available, DFIRM alone can be used to estimate an elevation. This requires finding the boundary of the 1% annual chance floodplain nearest the construction site. This can be done by examining the DFIRM to find a nearby reference point, such as a road intersection, railroad crossing, etc., through which the boundary passes and then locating the landmark in the field.

Another way is through scaling. Scaling involves measurements from a reference point on the DFIRM to the flood boundary nearest the construction site, the conversion of the map distance to ground distance, and the actual measurement of this distance in the field. When the site location has been determined, the ground elevation of the point on the floodplain nearest the construction site is the 1% annual chance flood elevation.

V. Regulating Development in the Floodway

As part of its responsibilities under the NFIP, FEMA has prepared DFIRMs and accompanying FISs throughout Pennsylvania. This information serves as the basis for enacting and administering local floodplain management regulations in compliance with the minimum requirements of the NFIP.

Municipalities with detailed flood studies should be familiar with the term “floodway.” The floodway is that portion of the 1% annual chance floodplain, which serves as a flood channel to pass the deeper, faster moving waters. Buildings, structures, and other development activities (such as fill) placed within the floodway can obstruct flood flows causing the waters to slow down and back up, resulting in higher flood levels.

To protect the free movement of floodwaters, participating municipalities must prohibit all encroachments, including fill, new structures, and other development within identified floodways that would cause any increase in flood heights. The following information is presented to help municipalities better understand and apply this NFIP regulation.

The FEMA Floodway

FEMA, the agency responsible for administering the NFIP, has established technical criteria for delineating floodways. The uniform identification of floodways and the consistent application of floodway regulations by participating municipalities throughout the nation will do much to curb future flood damages and reduce flood insurance claims.

In establishing a floodway, FEMA assumes that floodplain development will continue, but only to a point where current 1% annual chance flood heights will be increased a maximum of one foot. To delineate specific floodway boundaries, a computer program is used to hypothetically fill both sides of the floodplain – starting from the edge of the floodplain and working toward the stream, until the floodplain is obstructed to an extent that flood levels will be raised one foot. The channel left open after squeezing in the conveyance area is the floodway.

The reason for allowing the one-foot increase is to leave ample room outside the floodway for development purposes, regardless of whether or not it will occur to that extent. In a sense, the floodway concept is a trade-off. A portion of the floodplain is allowed to be developed in exchange for reserving an open area for the discharge of floodwaters.

Floodways are calculated as part of the detailed flood study prepared by FEMA and are shown for selected stream reaches on DFIRMs. Specific hydraulic information, including the width, sectional area, and mean velocity of flow for each measured cross section is provided in the Floodway Data Table contained in the FIS booklet. This information can be useful in performing engineering computations for determining increases in flood heights. To determine when floodway regulations apply, it is important to accurately locate each and every development proposal on the DFIRM and determine if the development overlaps the designated floodway.

Administering Floodway Regulations

If a proposed activity is to be located entirely or partially within an identified floodway, the applicant will have to comply with floodway provisions in the municipal floodplain ordinance. Some municipalities prohibit all or certain kinds of development from locating in the floodway, while others have adopted the minimum floodway performance standard required by the NFIP.

NFIP requirements stipulate that an applicant must obtain all necessary federal and state permits as a condition for receiving a local permit. This is particularly important as it pertains to development activities in the floodway and can be extremely helpful in administering local floodway regulations.

Under state law, the PA DEP has jurisdiction over all obstructions located within a floodway area. This includes the floodway areas identified on the DFIRM as well as those areas 50 feet landward from the top of the bank of any

watercourse for which a floodway is not identified. This means an applicant must obtain a state encroachment permit as well as a local floodplain management permit prior to conducting any development activities within this area. Applicants should contact the DEP, Bureau of Waterways Engineering and Wetlands for permit instructions.

PA DEP reviews encroachment applications based on standards similar to local floodway regulations required through the NFIP. Where a municipality's ordinance permits an activity within a floodway and the DEP issues an encroachment permit for that activity, a municipality may use DEP's permit as a basis for issuing a local floodplain management permit. On the other hand, a municipality should reject a permit application if DEP refuses to issue an encroachment permit.

When an activity involves a small structure or small amount of fill, DEP may determine the development does not constitute an obstruction and, as a result, may not require an encroachment permit. Where the municipality's ordinance permits fill within a floodway, the municipality should ask the applicant to present evidence that DEP was contacted and that DEP determined that the fill does not require a state encroachment permit.

If a municipality decides not to accept the issuance of a state encroachment permit as basis for an applicant complying with local floodway regulations, the applicant can be required to provide the documentation necessary for the municipality to make its own determination. Unless the applicant can establish that no rise in the 1% annual chance flood would result, a municipal floodplain management permit may not be issued. Municipalities should require documentation prepared by a registered, professional engineer certifying the effect of the proposed development on flood heights.

Where a municipal ordinance permits floodway development and a proposed development has demonstrated it will not cause a rise, a municipal floodplain management permit may be issued, provided all other applicable floodplain management regulations are followed, such as the elevation of residential structures or the flood-proofing of non-residential structures. All engineering documentation concerning impacts on flood heights should be filed and made available upon request to FEMA.

No Rise Options

In order to develop a property located in the floodway, an applicant may be able to avoid an anticipated rise caused by a project by making compensating improvements. For example, a channelization project to improve flow through the floodway may offset the rise caused by a proposed building. A municipal floodplain management permit could be issued, provided the applicant receives approval from DEP and FEMA, if the channel modification affects the floodway boundaries. Again, the applicant needs to submit the necessary engineering justification certifying compliance with the "no rise" criteria.

Another opportunity to develop in the floodway can occur when rebuilding or replacing an existing structure with one of equal or smaller dimensions. An applicant can rebuild or replace a structure of similar size without having to supply engineering information, since its placement will create no more of an obstruction to flood flows than the original structure. However, engineering analysis must be provided in the event the replacement dimensions are greater than the dimensions of the original structure. A municipality should maintain an inventory of structures which existed at the time the floodway was delineated and, if possible, include the size and location of each. Rules around pre-FIRM structures are likely to change as HFIAA is implemented.

Prohibited Structures

The Pennsylvania Flood Plain Management Act requires municipal ordinances to prohibit from the floodway the construction or substantial improvement of any structure used for the production, storage, or maintenance of a supply of 18 particular materials and substances considered dangerous to human life. Additional information on these prohibited uses follows in the section *DCED Floodplain Management Regulations*.

References and Further Assistance

Anyone interested in further information concerning this topic should obtain a copy of the booklet *The Floodway: A Guide for Community Permit Officials, Community Assistance Series, No. 4, FEMA-FIA*. This publication is available from FEMA or DCED.

DCED is responsible for coordinating the NFIP and for administering the Pennsylvania Flood Plain Management Act. DCED staff is available to help municipalities administer floodplain management regulations.

VI. Permits for Construction and Development Requiring Floodplain Management

To participate in the NFIP, a municipality must enact an ordinance, which at a minimum, meets the floodplain management requirements established by FEMA. This means that a participating municipality must regulate all construction and development within those areas of the community identified by FEMA as being flood-prone. To accomplish this, a municipality must review development proposals prior to any construction or development to ensure construction and development is in compliance with any applicable floodplain management regulations. This review may involve application for and issuance of zoning permits, land development and subdivision plan approvals, building permits, stormwater management permits, floodplain management permits, and other planning processes. The review may be conducted by a floodplain administrator, permit administrator, building inspector, zoning administrator, or another position designated by each municipality.

While it may sound rather simple and straightforward, it is not always an easy matter to distinguish between those activities that require floodplain management and those that do not. The following information is provided to help municipalities become more confident in making this determination.

The Meaning of Construction, Development, and Substantial Improvement

“Construction” is not defined in the NFIP or related federal regulations. However, “development” is defined in the Code of Federal Regulations as:

Any manmade change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations.

Therefore, in addition to construction of buildings and other structures, the term development also applies to most land development activities, such as the grading and paving of roads and the installation of water and sewer service and related facilities; site preparation activities, such as the placement of fill and excavation work, including the installation of on lot sewage systems; and mining operations for the extraction of natural resources, such as sand and gravel, limestone, gas and oil, coal, and other minerals. It also covers the clearing of water obstructions and the dredging of stream channels.

“Substantial Improvement” is an important concept in the NFIP and requires permitting and review for floodplain management compliance. FEMA defines “Substantial Improvement” as follows:

Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the “start of construction” of the improvement. This term includes structures which have incurred “substantial damage,” regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or
2. Any alterations of a “historic structure,” provided that the alteration will not preclude the structure's continued designation as a “historic structure.”

Floodplain management requirements for new construction apply to substantial improvements. Increased Cost of Compliance (ICC) coverage does not apply to substantial improvements unless a structure is substantially damaged due to flooding.

Permit Exemptions

Taken literally, permits would be required for just about anything imaginable from planting a tree to putting in a mailbox. However, the intent of the NFIP regulations and of local floodplain management ordinances, in general, is to reduce future flood damages. Therefore activities which have no direct bearing on increasing flood damage or aggravating flooding conditions are excluded from the permit requirement.

Permits are not needed for temporary activities such as carnivals and other transient facilities or the placement of construction trailers. "Temporary" refers to activities that will be completed or terminated within six months from the time they were started. If an activity is to continue well after six months, it should be treated as a permanent activity. For example, construction trailers are commonly associated with projects that last for more than six months. In these instances, a permit should be required in order to ensure that the vehicle is properly located and/or can be safely evacuated in the event of a flood.

Minor repairs to existing structures are also exempt. Through the Pennsylvania Construction Code Act, Act 45 of 1999, 35 P.S. §§7210.101- 7210.1103, Pennsylvania established the Uniform Construction Code (UCC) which adopted the International Code Council's 2009 code series as the applicable code statewide. As an example, the International Building Code required by the Uniform Construction Code would consider the following as an ordinary or minor repair:

The replacement of existing work with equivalent materials for the purpose of its routine maintenance and upkeep, but not including the cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or bearing support, or the removal or change of any required means of egress, or, arrangement of parts of a structure affecting the exit way requirements; nor shall minor repairs include addition to, alteration of replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring, or mechanical or other work affecting public health or general safety.

Minor repairs include putting on a new roof and replacing siding, windows, or doors. However, enlarging a structure through an addition is considered new construction, not a minor repair. Any work that changes the exterior dimensions of a structure requires a permit.

Some land development activities are also exempt. The greatest concern over the regulation of land development activities involves the modification of existing drainage patterns and the effect this has on increasing or aggravating flooding conditions. Permits are not required for normal farming operations, the removal of trees, or the placement of small quantities of fill (except in the floodway). However, the installation of drainage or diversion channels and stormwater management facilities are required to be permitted. While the cutting of trees is exempt, timbering operations that involve the development of skid or haul roads require permits.

The outside storage of materials is another activity which may be exempt from the permit requirement simply because it is not covered under the definition of construction and development. When incidental to an existing use, the storage of materials can occur without a permit being issued. However, even though a permit may not be required, storage must comply with the provisions in a municipality's floodplain management ordinance. If storage is associated with the construction or development of a new facility or the expansion of an existing one, the approval of the permit application should be based on a complete review of the activity including the proper location and protection of stored materials. Depending on the type of material, outside storage in flood-prone areas can be a serious hazard and municipalities concerned with this loophole in the permit system should consider making the necessary changes to extend the permit requirement to cover any storage activity.

Administration

While some distinctions can be made concerning different types of construction and development and the need for permits, it would be difficult to identify and classify every possible situation. Nor is it necessary.

There will be instances where the permit officer will have to use his or her discretion in deciding whether or not a permit is required. Basically, permits are required if an activity can affect flooding conditions or can be damaged by flooding. This will primarily be determined by three factors: type, location, and magnitude of the activity. The different types of construction and development have already been discussed. As for location, the chance of an activity affecting flood heights is much greater in the floodway than in the other areas of the floodplain. As such, it may be necessary to require permits for activities in the floodway which would not ordinarily require a permit if located within other portions of the floodplain. The floodway is that portion of the floodplain including the stream channel and adjacent land area where the deeper, faster moving floodwaters are typically found. This would include any amount of fill, fencing, retaining walls, boat docks, or any other development activities that may obstruct flood flows.

The magnitude or size and extent of the proposed activity will most likely be the deciding factor in situations in which there is some question as to whether or not a permit is required. Needless to say, the larger the activity, the greater the potential for flood damage and for affecting flooding conditions. Small-scale activities such as planting a tree or installing a mailbox are insignificant compared to a proposal to develop irrigation channels or to change existing ground contours through grading.

The other factor that comes into play is the ordinance itself. Some municipalities may require permits for all activities regardless of size. Others may exempt activities under a certain cost. The permit officer should be familiar with any ordinance provisions that limit or otherwise establish minimum criteria for requiring permits.

The purpose of the permit system is to give municipalities an opportunity to review construction and development proposals for compliance with local floodplain management regulations. If there remains a question, it is better to err on the side of caution and require a permit.

Getting the Word Out

While municipalities may fully understand the need for permits, often community residents are not aware that they should check with the permit officer before proceeding with a project. Trying to resolve compliance problems after a structure or project is underway or completed can be troublesome and time consuming. Efforts to periodically inform the community of the need for permits can help cut down on the number of unauthorized activities.

Resources for public outreach include websites, signs in public buildings, announcements at public meetings, newsletter and newspaper articles and letters, and notices in utility bills. Municipalities should use whatever methods have been the most successful in informing their communities in the past. There are several Pennsylvania-specific resources that municipalities and counties can access and/or link to from local websites. These resources include:

- **DCED's PA Flood Maps:** www.pafloodmaps.com
- **FEMA Region III Pennsylvania - Mapping Status:** www.rampp-team.com/pa.htm
- **Pennsylvania Silver Jackets Flood Risk Management Resources:**
www.nab.usace.army.mil/Home/SilverJackets.aspx

Municipalities interested in doing something to inform their residents should be aware that the DCED reimburses municipalities for up-to-half of the eligible costs for administering and enforcing floodplain management regulations. Any effort to publicize local regulations is considered an administrative function eligible for reimbursement.

VII. Elevation and Flood-Proofing

Municipalities participating in the NFIP must enact and administer local floodplain management regulations, which, among other things, require the elevation or flood-proofing of buildings and structures at or above the base flood elevation (BFE). The BFE is the elevation to which floodwater will rise during a base flood, a flood that has a one percent chance of occurring annually. The base flood is the national standard used by the NFIP and all Federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development.

The elevation and flood-proofing provisions are the most important of all NFIP requirements for several reasons. Very simply, a properly elevated or flood-proofed structure is less prone to being flooded. This translates into reduced flood damages over the life of the structure and, to its occupants, a lessening of the financial and emotional burdens which are typically encountered when putting a home or business back in order after a flood. Having structures below the BFE can also have insurance implications that increase policy costs for a property owner or even a community. For these and other reasons, it is important for municipalities to properly administer the elevation and flood-proofing requirements. The following information explains the minimum NFIP requirements and other related matters.

New Construction and Substantial Improvements

The NFIP elevation and flood-proofing requirements apply to new construction and to substantial improvements to existing structures. New construction refers to freestanding structures built after the enactment of a municipality's *first* floodplain ordinance. Substantial improvements are defined as any alteration, repair, reconstruction, or expansion to a structure existing at the time of enactment, of a municipality's *first* floodplain ordinance, the costs of which equals or exceeds 50 percent of the market value of the existing structure. There are exemptions in some cases when a structure is listed on the National Register of Historic Places or a State Inventory of Historic Places.

For the purposes of the NFIP, all structures are classified as either residential or non-residential. A residential structure is used for human habitation containing eating, living, and sleeping quarters. The term includes single-family dwellings, apartments, tourist homes, rooming houses, and the like. All other structures are considered non-residential and include such things as garages, shops, banks, churches, schools, warehouses, and farm buildings.

Residential Structures

New residential structures and substantial improvements to existing residential structures must be built so that the lowest floor is to or above the 1% annual chance flood elevation. The lowest floor is the finished floor of the lowest enclosed space including basements.

How a structure is to be elevated is up to the property owner. Elevation may be accomplished by raising the site with fill material or by using raised foundations, reinforced concrete or cinder block columns, wood posts, and other similar methods. The one exception to this is if the property is located within an identified floodway. Because of the concern for preventing increases in flood heights, the placement of fill for elevating a structure may be out of the question. Under these circumstances, the property owner will have to select an alternative method of elevation that poses the least obstruction to flood flows such as the use of columns, posts, or piers.

In any event, it is important to remember that the lowest floors (including basements) of new residential structures and substantial improvements to existing residential structures must be elevated, at a minimum, to the level of the 1% annual chance flood.

Non-Residential Structures

For new non-residential structures and substantial improvements to existing non-residential structures, there is an option. Either the lowest floor (including basement) must be built to or above the 1% annual chance flood level or any space built below the 1% annual chance flood level must be flood-proofed in a watertight condition, with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Anyone intending to build a flood-proofed building must obtain the services of a registered professional engineer or architect to develop or review the design, specifications, and plans for the structure and to certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the flood-proofing requirements.

Technical publications that can be used by municipalities in administering this flood-proofing regulation as well as by architects and engineers in designing such structures are available at:

- **Flood-Proofing Regulations**, Prepared by the USACE June 1972 and updated last in 1995:
<http://www.usace.army.mil/Portals/2/docs/civilworks/Project%20Planning/nfpc/Flood%20Proofing%20Regulations%201995.pdf>
- **Flood proofing, FEMA guidance and documents:** <http://www.fema.gov/national-flood-insurance-program-2/floodproofing>

Watertight flood-proofing is categorized as either completely dry (W1) or essentially dry (W2). The only difference between the two classes is that some water vapor and seepage is allowed to occur in a W2 designed building. In either case, the purpose is to keep the enclosed space located below the 1% annual chance flood elevation – dry and damage free. Copies of the *Flood-Proofing Regulations* manual may be obtained by contacting DCED or the U.S. Army Corps of Engineers.

It is important to remember that, for this purpose, FEMA recognizes one type of flood-proofing, with a limited exception. Only those new or substantially improved non-residential structures built in a completely or essentially “dry” flood-proofed manner are eligible for flood insurance. However, FEMA also realizes that there are a variety of non-residential structures that, because of their relatively small size, type of construction, and low damage potential, need not be elevated or “dry” flood-proofed. These include such things as picnic pavilions, gazebos, boat docks, and other open sided structures, as well as small accessory storage sheds. For floodplain management purposes, such structures may be constructed in a “wet” flood-proofed manner. As the term suggests, such structures must be designed and constructed to prevent or minimize damage when flooded. Specifications for wet flood-proofing are listed under the W3 or W4 flood-proofing classifications described in the publication *Flood-Proofing Regulations*.

Protecting Existing Development

Federal and state floodplain management requirements only apply to new structures or to substantial improvements of existing structures. Owners of existing buildings vulnerable to flooding may desire to undertake their own actions to reduce future flood damage. The relocation of homes and businesses, elevation of structures, and the construction of small dikes and levees are just a few examples. If anyone in your municipality is looking for information regarding flood damage reduction measures, they should contact DCED or the U.S. Army Corps of Engineers.

VIII. Manufactured Homes

Manufactured homes present a particular hazard when located in floodplain areas. First of all, they are extremely vulnerable to flood damage. On average, one foot of floodwater above the first floor of a manufactured home can cause damage up to 45 percent of the value of the structure and its contents as compared to a 25 percent loss to a conventionally built home.

Secondly, because of their relatively light-weight construction and the fact that they are frequently placed on inadequate foundations not properly anchored, manufactured homes often become buoyant in fast rising floodwater and are swept downstream colliding into other structures or blocking culverts or bridge openings.

Because of these special problems, municipalities participating in the NFIP and those compliant with the Pennsylvania Flood Plain Management Act must administer specific regulations to ensure the proper location and installation of manufactured homes in flood-prone areas. Regardless of their use as a residential or non-residential structure, all manufactured homes must have the lowest floors elevated to or above the 1% annual chance flood level. Flood-proofing is **not** an option. Manufactured homes must also be placed on a permanent foundation and anchored to resist flotation, collapse, or lateral movement.

This publication explains the current NFIP and Flood Plain Management Act requirements and how municipalities should interpret and administer them.

Definitions

Due to the recent revisions to some of the requirements of the NFIP, the term “mobile home” has been replaced with the term “manufactured home”. In addition, the definition was changed. According to current NFIP requirements a manufactured home is defined as:

A structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term “manufactured home” does not include a “recreational vehicle.”

They refer to units built on a chassis, usable with or without a foundation, and are generally covered by the Department of Housing and Urban Development Manufactured Home Construction and Safety Standards.

On the other hand, manufactured homes should not be confused with modular or other industrialized housing, even though these forms of housing are also built in a factory and are transported to the site for placement and assembly. The critical difference is that modular and other industrialized housing are designed only for erection or installation on a permanent foundation, they are not designed to be moved once erected or installed, and they are designed and manufactured under the auspices of DCED. For floodplain management purposes, a modular or industrialized home should be treated as a conventionally built home.

The most significant change to the new definition of manufactured home is the inclusion of “park trailers, travel trailers and other similar vehicles placed on a site for more than 180 consecutive days.” Recreational vehicles can be as much of a problem during flooding as standard mobile homes. RVs parked along the banks of rivers and streams are easily upended and carried downstream causing damage to other structures or aggravating flooding conditions by restricting the flow of floodwater through bridge openings and culverts.

Since RVs are vehicles, they can often be moved to higher ground rather quickly, given proper warning time. But RVs or trailers are not always mobile. In many cases, RVs are placed on a site with no intention of ever removing them. Wheels are taken off or, if left on, the tires rot. Some are placed on supports or foundations. Under these and other circumstances, RVs become permanent structures. The 180 consecutive day provision in the FEMA definition is an attempt to make a distinction between RVs which are temporarily placed, as opposed to those where placement

becomes more permanent.

Minimum NFIP Requirements

All manufactured homes, whether residential or nonresidential, must be placed on a permanent foundation so that the lowest floor is elevated to or above the base flood elevation. In this respect, manufactured homes are treated the same as conventionally built residential structures.

However, in addition to being elevated, manufactured homes must also be properly anchored to resist flotation, collapse, or lateral movement. There are many different ways of meeting this performance criterion. A common method is to attach the metal frame ties exposed underneath the perimeter of new manufactured homes to metal ground anchors, which are drilled or concreted into the ground. When a post or pile foundation is used, the chassis I-beam can be attached by using metal brackets and lag screws. In 2009 FEMA updated a publication titled *Protecting Manufactured Homes from Floods and Other Hazards*. This document provides a variety of elevation and anchoring methods and is available at: <https://www.fema.gov/media-library/assets/documents/2574>.

As with any other local regulations, the burden of proof is always on the applicant. If there is any question as to the adequacy of a proposed anchoring system, the municipality should require the applicant to provide a certification from a registered professional engineer or architect stating that the design meets the anchoring requirements.

Manufactured Home Parks

Manufactured home parks are regulated through DCED's Floodplain Management Regulations, which were promulgated in accordance with the Pennsylvania Flood Plain Management Act. Municipalities in compliance with Act 166 of 1978 have regulations calling for the issuance of special permits for the development of new and substantially improved manufactured home parks in flood-prone areas.

As part of the special permit process, an applicant must submit detailed information about the site, its development, and any proposed structures. In addition, engineering documentation showing that flood damage and impacts on flooding will be minimized is required. Of particular note is the technical requirement for elevating the lowest floor of all manufactured homes to one and one half (1½) feet above the 1% annual chance flood level.

The placement of manufactured homes in manufactured home parks is also regulated through NFIP. Manufactured homes placed in new parks or expansions or substantial improvements to existing parks must be elevated and anchored.

One issue currently under review by FEMA concerns the replacement of manufactured homes in existing parks. At present, a manufactured home in a manufactured home park may be replaced with another one without requirement that it be elevated, provided that the replacement home is anchored. Future revisions to the NFIP requirements may require that replacement units be elevated, as well. Municipalities reviewing permit applications for the replacement of manufactured homes should contact FEMA or DCED for the latest NFIP requirements.

Prohibition in Floodway

As a result of the October 1986 revisions to the NFIP requirements, manufactured homes are no longer prohibited from being placed in identified floodways. However, municipalities may want to retain the prohibition provision contained in their floodplain management regulations for several reasons. The following paragraphs address the two most important concerns.

First, even if a municipality decides to allow manufactured homes in the floodway, the "no rise" rule will effectively prevent something of the size of a manufactured home from being located in a floodway. The "no rise" rule prohibits any construction or development within the floodway that would cause any increase in flood heights.

Second, manufactured homes placed on a permanent foundation and adequately anchored to prevent movement or

collapse due to the level and force of a 1% annual chance flood can be overwhelmed by a flood of a greater magnitude. Situating a manufactured home in the floodway, the area of the floodplain, which characteristically encompasses the deeper, faster moving floodwaters, is asking for trouble.

Further Information and Assistance

Besides those previously mentioned, there are other publications prepared by DCED and various federal agencies that provide general as well as technical information about flood damage reduction measures. Visit the Additional Resources page at: www.pafloodmaps.com.

IX. Variances

The NFIP makes allowance for communities to consider requests for relief in the form of a “variance” from floodplain management regulations without losing their eligibility to participate in the NFIP.

The variance is a safety valve, which is used to provide the necessary relief when unusual circumstances arise. In general, variances are meant to be issued sparingly, if at all. Property owners may have many practical reasons for wanting relief from the regulations, but upon thorough examination, few, if any of the reasons are ever sufficient to satisfy the variance criteria as outlined below. Municipalities must avoid the pitfall of issuing unwarranted variances. This can have a “domino” effect by creating a demand for variances from adjacent property owners, and others who feel that they, too, are adversely affected by local floodplain management regulations. More importantly, the ordinance is, after all, designed to protect public health and safety.

Variance Criteria

The following outlines the NFIP criteria, characterized in the NFIP as procedures, and offers an explanation of each.

Section 60.6 (a)(1) — *Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result.* The purpose of this criterion is to preserve the integrity of the floodway and to minimize the effects of future floodplain development on flood heights. This provision bars municipalities from issuing variances relative to floodway encroachments, which will cause obstructions to flood flows. Neither the general floodway regulations nor this variance restriction should be construed to prohibit all development in the floodway. Development is allowed provided it conforms to the performance standard of “no-rise.”

Section 60.6 (a) (2) *Variances may be issued by a community for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, in conformance with the procedures of paragraphs (a) (3), (4), (5), and (6) of [Section 60.6].* While the granting of variances should be limited to lots of smaller size, deviations from that limitation may occur. However, as the lot size increases, the technical justification required for issuing a variance increases. The point is that unique physical restraints are most often associated with small lots where setback distances, rights-of-way, and closeness to adjacent properties may pose severe limitations to the development of a tract.

Section 60.6 (a) (3) (i) *Variances shall only be issued by a community upon a showing of good and sufficient cause.* The variance request must demonstrate a substantial and legitimate benefit to numerous citizens, or the community as a whole. The benefit must be more than just the financial benefit of the applicant.

Section 60.6 (a) (3) (ii) *Variances shall only be issued upon a determination that failure to grant the variance would result in exceptional hardship to the applicant.* The hardship that would result from failure to grant a variance must be unnecessary, unusual, and peculiar to the property involved. Mere economic or financial hardship alone is not acceptable cause. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one’s neighbors likewise do not qualify as exceptional hardships.

Of all the variance criteria, this is the most difficult for a property owner to prove or demonstrate. Only when the regulations impose a severe burden due to the particular physical circumstances of the property, which are not shared by other similarly situated properties, can there be sufficient grounds for a hardship. To apply a less rigorous interpretation could lead to the issuance of unwarranted variances.

Since NFIP requirements are principally building and design standards, the chance of a true hardship being created by the application of the regulations is very, very small. General zoning setbacks and use restrictions applied to a small, irregularly shaped lot are more apt to give rise to an exceptional hardship than the elevation and flood-proofing standards of local floodplain management regulations. If a building can be located on a flood-prone lot given other municipal restrictions, there should be no reason why the structure cannot be properly elevated or flood-proofed.

One area of the NFIP requirements that may raise the hardship question is the regulation of floodway development. A vacant residential lot located entirely within a floodway area may be difficult to develop without increasing flood heights. Still, there may be opportunities to offset potential increases by making compensating site or off-site improvements. To avoid these kinds of situations, communities should try to zone such areas for accessory or low-density/open space uses, if practical.

Section 60.6 (a)(3)(iii) *Variances shall only be issued upon a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.*

Floodplain management regulations often reflect the minimum safety standards, which should be applied to floodplain development. To vary the regulations would certainly aggravate the threat to public safety. Easing off on the elevation requirement to facilitate handicapped access is such a case. To willfully expose the handicapped and emergency personnel to life threatening evacuation risks is another factor to consider in assessing public safety concerns.

Flood damaged structures are often viewed as public nuisances, at least temporarily. If damage is significant enough, the structures may become abandoned leaving the municipality to deal with the problem of demolishing the structure before someone is injured or before the value of adjacent properties is adversely affected. Allowing structures to be built in a more vulnerable fashion by easing off on the flood protection requirements increases the risk of creating future public nuisances.

Properly granted variances must not cause fraud on or victimize the public. In examining this requirement, local boards should consider the fact that every newly-constructed building adds to local government responsibilities and remains a part of the community for a long time. Buildings that are permitted to be constructed below the base flood elevation are subject to increased risk of damage from floods, while future owners of the property and the community as a whole are subject to all the costs, inconvenience, danger, and suffering that increased flood damages bring. In addition, future owners may purchase the property, unaware that it is subject to flooding, and can be insured only at very high flood insurance rates.

Section 60.6 (a) (4) *Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.* In the case of variances to an elevation requirement, this means the board need not grant permission for the applicant to build at grade or even to whatever the applicant proposes, but only to that level that the board believes will both provide relief, minimize danger, and preserve the integrity of the local ordinance.

The following are additional procedures required by the NFIP when granting a variance.

Section 60.6 (a) (5) *A community shall notify the applicant in writing over the signature of a community official that (i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (ii) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in paragraphs (a) (6) of [Section 60.6]...*

While the building standards in a local ordinance may be altered by means of a variance, the flood insurance purchase requirement, which must be enforced by lending institutions, cannot be waived, and thus may create severe financial consequences for the property owners, both present and future. Insurance rates for structures built below the 1% annual

chance flood elevation can be substantially higher than those for elevated structures. In many instances the rates will be so high as to make the structure essentially uninsurable because the owners cannot afford the premium. This may not matter to the original owner who applied for the variance in the first place, but it may matter a great deal to subsequent owners who cannot find buyers because of the high insurance rates, or to the community that finds itself with large numbers of unsaleable houses.

Section 60.6 (a)(6) *A community shall (i) maintain a record of all variance actions, including justification for their issuance and (ii) report such variances issued in its annual or biennial report to the Administrator [FEMA].*

Variations under the Pennsylvania Flood Plain Management Act

Pennsylvania's Flood Plain Management Act and its accompanying regulations limit variances involving Special Permit Activities and Development Which May Endanger Human Life. For these activities and development, a municipality may only vary the minimum freeboard safety requirement, imposed by the act and regulations, of 1½ feet above the 1% annual chance flood elevation. A municipality may vary the freeboard requirement provided that the applicant can meet criteria and procedures set forth in Section 113.6(i) and (j) and 113.7(d) and (e) of the state regulations. The criteria are closely related to those of both the NFIP regulations and Section 910.2 of the MPC dealing with variances from zoning requirements.

Section 113.6(i) and (j) and 113.7(d) and (e) *should be carefully reviewed in the event of a variance request from the freeboard safety factor. DCED staff is available to provide technical assistance.*

The Pennsylvania Municipalities Planning Code (MPC) also uses the term “variance.” In the MPC, “variance” refers to a means of relief from the strict application of the requirements of a municipal zoning ordinance. The criteria for grant of a variance from a zoning ordinance are found in Section 910.2 of the MPC. These criteria are different from those set forth in the NFIP for the grant of a variance from floodplain management requirements.

Where a municipality has incorporated its floodplain management regulations required by the NFIP and the Pennsylvania Flood Plain Management Act into its zoning ordinance, the applicant for variance will need to satisfy the criteria of Section 910.2 of the MPC and the NFIP criteria for grant of a variance from floodplain management regulations.

Note also that the MPC uses the terms “modification” and “waiver” to refer to a means of relief from the strict application of the requirements of a municipal subdivision and land development ordinance. The MPC provides for criteria for relief from a requirement of the subdivision and land development ordinance (Section 503(8) and 512.1) that differ from the criteria for relief from a requirement of the zoning ordinance. Again, they also differ from the criteria for relief under the NFIP.

Where a municipality has incorporated its floodplain management regulations required by the NFIP and the Pennsylvania Flood Plain Management Act into its subdivision and land development ordinance, the applicant will need to satisfy the criteria of Section 503(8) and 512.1 of the MPC and the NFIP criteria for grant of a “variance” from the floodplain management regulations.

Alternatively, the municipality may elect to adopt a special purpose ordinance for purposes of floodplain management regulation providing for grant of a variance solely in accordance with the NFIP criteria.

Variance Procedure

Procedures for considering variances – processes, timelines, and responsible party(ies) – are not specified by either the National Flood Insurance Program or the Pennsylvania Flood Plain Management Act, but are specified in the Pennsylvania Municipalities Planning Code.

If a municipality has enacted a zoning ordinance, the MPC specifies that the zoning hearing board established by the zoning ordinance shall have exclusive jurisdiction to consider and decide applications for variances from flood hazard

ordinances. The zoning hearing board has this authority even if floodplain management regulations are in a stand-alone ordinance or in a subdivision and land development ordinance, as well as in the zoning ordinance. In considering variances from floodplain management regulations, a zoning hearing board must hold hearings and render decisions in accord with the same requirements of the MPC set forth for zoning variances.

If a municipality does not have a zoning ordinance and zoning hearing board, and it enacts a stand-alone floodplain management ordinance under its general enabling authority (e.g., the Second Class Township Code), FEMA suggests that some knowledgeable board of arbiters be designated to consider and decide variances. The board could be the governing body which enacted the ordinance or a special purpose board; however it cannot be called a zoning hearing board. Procedures for variance must be set forth in the stand-alone ordinance. To meet due process requirements, such procedures at a minimum should include provisions for application, hearing, decision, notice of hearing and decision, and appeal.

If a municipality does not have a zoning ordinance and a zoning hearing board, and it includes floodplain management regulations in a subdivision and land development ordinance, floodplain management variances would be considered and decided in the same way as requests for modifications or waivers to the subdivision and land development regulations – by the governing body, or by the planning commission if so designated as the decision-making body in the ordinance.

Summary

The variance is like a safety valve, which is used to provide the necessary relief when unusual circumstances arise. In general, variances are meant to be issued sparingly, if at all. Property owners may have many practical reasons for wanting relief from the regulations, but upon thorough examination, few, if any, of the reasons are ever sufficient to satisfy the variance criteria as outlined here. Municipalities must avoid the pitfall of issuing unwarranted variances. This can have a “domino” effect by creating a demand for variances from adjacent property owners, and others who feel that they, too, are adversely affected by local floodplain management regulations. More importantly, the ordinance is, after all, designed to protect public health and safety.

Further Information and Assistance

Copies of DCED’s Floodplain Management Regulations can be obtained from the nearest DCED – Governor’s Center for

Local Government Services Regional Office.

DCED is responsible for coordinating the NFIP and for administering Act 166 of 1978. Staff is available to help municipalities prepare, enact, and administer floodplain management regulations. For further information or assistance, call our toll free number 1-888-223-6837 or contact the DCED Regional Office serving your local area.

X. Pennsylvania Flood Plain Management Act and State NFIP Coordination Office

Most of the provisions contained in local floodplain management regulations are derived from the minimum requirements of the NFIP. However, some of the provisions have also come about as a result of the Pennsylvania Flood Plain Management Act.

The Pennsylvania Flood Plain Management Act requires all flood-prone municipalities to participate in the NFIP. To participate, a governing body must enact local floodplain management regulations that at a minimum comply with federal requirements. In addition to complying with federal requirements, the Pennsylvania Flood Plain Management Act also directs municipalities to include provisions that comply with the minimum state floodplain management requirements. These additional state requirements are contained in the formal administrative regulations found in Chapter 113 of Title 12 of the Pennsylvania Code (Commerce, Trade and Local Government), 12 Pa. Code §§ 113.1 – 113.11.

Although similar to the NFIP requirements, state floodplain management requirements differ by applying only to certain specified activities and by requiring additional precautionary measures against flooding. The publication explains these state requirements and what municipalities should do to properly administer them.

Development must comply with the more restrictive of the federal or state regulations. DCED provides technical assistance and tools for compliance as the State NFIP Coordination Office.

Special Permits²

Section 38.6 of DCED's Floodplain Management Regulations identifies four development activities that must be reviewed through a special permit process in order to obtain approval to locate in flood-prone areas. The four activities are:

1. Jails and prisons
2. Hospitals
3. Nursing homes
4. Mobile home parks (manufactured home parks)

The commonwealth requirements must be applied to all proposed new facilities and, in the case of jails, hospitals, and nursing homes, to expansions to any such existing facilities. For existing manufactured home parks, the requirements must be applied to any substantial improvements.

Technical Requirements

No special permit may be issued to an applicant unless the proposed facility is designed to meet or exceed the technical requirements cited in Subsection 38.6 (h) of DCED's regulations. These requirements differ from the minimum NFIP requirements in that they provide for greater protection and safety against flooding.

First of all, the lowest floor elevation of a structure requiring a special permit must be constructed at least 1½ feet above the elevation of the 1% annual chance flood. NFIP requirements only provide for the elevation of lowest floors to the

elevation of the 1% annual chance flood. This extra level of protection is called a freeboard. It is a margin of safety against errors in flood data and increases in flood heights due to floodplain and general watershed development.

² The term “special permit,” used in the floodplain management regulations (12 Pa. Code §§ 113.1 -113.11), relates to and is synonymous with the term “special exception” used in the Flood Plain Management Act.

Secondly, the occupants of a building must be able to be safely evacuated at any time during a 1% annual chance flood. This is particularly important when it comes to hospitals and nursing homes where the occupants may be bed-ridden or may find it difficult to walk on their own. Under these vulnerable circumstances plenty of warning time and good emergency preparedness is needed to minimize the threat to life. A safety and evacuation plan should be in place at all such facilities.

Next, the applicant must ensure that any significant possibility of pollution, increased flood levels or flows, or debris endangering human life and property is prevented in order to reduce the impact of the development on existing flooding conditions and to reduce flood related damages. These concerns must be addressed in the design of the facility.

Lastly, the development must also comply with minimum NFIP requirements in addition to the preceding state requirements. For example, manufactured homes placed in a new or substantially improved manufactured home park must be placed and anchored according to NFIP requirements besides being elevated 1½ feet above the 1% annual chance flood elevation.

Application Information

An applicant must submit a very detailed package of information and documentation to a municipality in order to begin the official review process. The items that must be included in the application package are specifically listed in Subsection 38.6 (g) of DCED’s regulations. These items include a detailed plan of the site showing existing and proposed buildings, roads, property lines, watercourses, ground contours, and information on the 1% annual chance flood including boundaries, water surface elevations, and velocity and direction of flood flows. Building plans are also necessary for all proposed structures and other improvements. In addition to showing detailed architectural and engineering drawings, the plans must include complete information on the physical impact of the 1% annual chance flood on all proposed structures and detailed information concerning any proposed flood-proofing measures. To complete the application package, the applicant must provide a series of certifications signed by a registered, professional engineer or architect ensuring that the facilities are designed to minimize flood damage.

Lastly, the applicant must prepare and submit an evacuation plan, which fully explains the manner in which the site can be safely evacuated before and during a 1% annual chance flood. The evacuation plan should include a description of the flood warning system which will be used to activate the evacuation plan, a listing of personnel and equipment which will be needed and their respective responsibilities or purposes, the primary and alternate paths of evacuation through the facility, as well as from the flood-prone site, names and telephone numbers of emergency units which are to be notified in the event of an evacuation, and a step-by-step explanation of how the plan will be executed in the event of a flood. Any special or unique circumstances peculiar to the facility or its occupants which would affect an evacuation should be explained as well. It is important to underscore the need for a properly prepared evacuation plan. It could become the difference between saving and losing lives.

Review Process

Once all the application information is completed and submitted to the municipality, the review procedures outlined in Subsection 38.6 (1) of DCED’s regulations must be followed.

To begin, the municipality must send a copy of the application package to the county planning commission for its review

and comment. It is up to the county to decide whether to review or to comment on the proposal. The only obligation the municipality has is to send the application package to the county within three working days following the receipt of the information from the applicant.

At this stage, the municipality must go through the process of reviewing the application package for compliance with the technical standards as well as for compliance with all other applicable local regulations. This should be done by the building permit or the Zoning Officer in conjunction with the municipal engineer. It is suggested that municipalities involve local planning agencies to assist in the review of such proposals.

If there are unresolvable problems with the proposal, and the municipality decides not to issue a special permit, then the process ends. However, if everything appears compliant, and the municipality approves the application, then a copy of the entire application package must be sent to DCED within five working days after local approval.

DCED has 30 days from the time it receives the information to review and communicate back to the municipality regarding the issuance of the special permit. If the municipality does not hear from DCED within this time period, it may go ahead and issue the special permit. However, if DCED does respond unfavorably within the 30 days, the municipality must **not** issue the permit. In this event, DCED is required to notify the municipality and applicant of its reasons for disapproval. If the applicant makes the necessary changes, he or she may resubmit the application package to the municipality, and the process begins anew.

Development Which May Endanger Human Life

Section 38.7 of DCED's Floodplain Management Regulations requires municipalities to regulate the building of new structures and the substantial improvements to existing structures, which are considered potential hazards when located in floodplain areas. The type of structures considered hazardous are defined in Section 38.7 of DCED's regulations as being those used for the production, storage, or housing of an activity requiring the maintenance of a supply of the following 18 specific materials and substances:

1. Acetone
2. Ammonia
3. Benzene
4. Calcium carbide
5. Carbon disulfide
6. Celluloid
7. Chlorine
8. Hydrochloric acid
9. Hydrocyanic acid
10. Magnesium
11. Nitric acid and oxides of nitrogen
12. Petroleum products (gasoline, fuel oil, etc.)
13. Phosphorus
14. Potassium
15. Sodium
16. Sulphur and sulphur products

17. Pesticides (including insecticides, fungicides, and rodenticides)
18. Radioactive substances, insofar as such substances are not otherwise regulated

It should be noted that, when it comes to the maintenance of a supply, the regulations do not apply when quantities are less than 550 gallons. This allows for the maintenance of a supply of home heating oil and other commonly used substances in small quantities without triggering the regulations. The only exception to this is radioactive substances. The maintenance of a supply of any amount of radioactive substances falls under the regulations.

Technical Requirements

The construction activities regulated by Section 38.7 of DCED's regulations are strictly prohibited from being built within any identified floodway area. The reason for this is that floodways include the areas of the floodplain where the faster, deeper moving floodwaters are commonly found. Therefore, the danger of structural damage and the potential of chemical leaks or spills can be more of a threat in the floodway than in other areas of the floodplain.

In flood-fringe areas, A and AE zones without floodways, or in floodplains with no identified floodways, often referred to as general or approximate floodplains, the regulated structures can be built provided they are constructed in conformance with the technical standards of Subsection 38.7 (b)(1) of DCED's regulations. This means that a new structure or a substantial improvement to an existing structure must be elevated or flood-proofed to at least 1½ feet above the 1% annual chance flood elevation. In this instance, flood-proofing is limited to completely dry flood-proofing as defined under the W1 space classification standard contained in the publication "Flood-Proofing Regulations" prepared by the U.S. Army Corps of Engineers. This report can be obtained by contacting DCED or the nearest U.S. Army Corps of Engineers Office.

Application Information and Review

Unlike the special permit requirements, there is no extra information required by the Pennsylvania Flood Plain Management Act and its regulations other than what is required by federal floodplain management requirements. If a structure is elevated, the applicant must provide the elevation of the lowest floor. If on the other hand, the structure is flood-proofed, the applicant must provide the elevation to which the structure is to be flood-proofed and submit the necessary certification signed by a registered professional engineer stating that the structure is designed in conformance with the completely dry (WI) flood-proofing standard.

There are no special review procedures, either. The permit application is to be reviewed and approved by the municipality. Staff from the DCED Floodplain Management Division is available to assist in the review of such applications.

Governor's Center for Local Government Services Planning Assistance

The Governor's Center for Local Government Services serves as a resource for local government officials, developers, and citizens interested in planning to improve, grow, and enhance communities. It provides valuable tools that will support wise land use decisions and encourage economic development, a healthy environment, and strong communities. More information regarding the Center's services may be obtained at dced.pa.gov/housing-and-development/community-planning/.

For Further Information and Assistance

DCED is responsible for coordinating the NFIP and related activities in Pennsylvania. DCED staff is available to help municipalities administer floodplain management regulations. Requests can be made to the nearest DCED Regional Office or to the Central Office in Harrisburg by calling 1-888-223-6837 toll free.

XI. Pulling it All Together: Examples for Permitting

A local building permit is one of many approvals needed by an applicant prior to building a structure or developing a piece of property. The variety of permits will depend on the type of construction or development, the location of the property, and, in some cases, the proposed use of the buildings, structures, or land improvements. Municipalities with floodplain management regulations in compliance with the requirements of the NFIP must pay particular attention to other permit programs when issuing building permits for construction and development activities in those areas identified by FEMA as being flood-prone.

Before issuing a building permit, a municipality must determine that the building complies with local zoning and that all necessary permits required by federal or state law are obtained by the applicant. The purpose of this NFIP requirement is to help municipalities avoid issuing local permits for activities that may be in conflict with federal or state regulations. In turn, the proper administration of this provision by municipalities can help applicants avoid the time, trouble, and expense arising from not securing all necessary permits.

The purpose of this section is to identify and briefly describe several federal and state regulatory programs that commonly apply to activities in or adjacent to waterways. Ordinance administrators should become familiar with these and any other applicable permit programs so that applicants can be advised to contact the necessary agency or agencies to find out whether a permit is required. For more specific information, such as copies of regulations or application forms, the individual agencies should be contacted directly.

Floodway Permits

Situation: *Mr. Kneidinger wants to build a garage behind his house located on Creekview Drive. When he arrives at the municipal building to apply for a building permit, you discover that the proposed site happens to be located within the floodway of Wetmore Creek, according to the map prepared for the municipality by FEMA. How would you advise Mr. Kneidinger?*

For municipalities with detailed Flood Insurance Studies prepared by FEMA, floodways are shown for selected streams on the accompanying Flood Boundary and Floodway Maps (FBFM) or FIRMs, whichever are applicable. The floodway is that portion of the floodplain including the stream channel and adjacent land area where the deeper, faster moving floodwaters are typically found. In addition to complying with specific municipal floodplain management regulations, an applicant wishing to undertake construction or development activities in a floodway must also comply with the state water obstructions and encroachment regulations of Title 25, Chapter 105 of the Pennsylvania Code.

The regulations stipulate that no person shall build any structure, place any fill material, or conduct any other activity considered to be a water obstruction or encroachment within any **floodway** without first obtaining a permit from the PA DEP. For those streams which do not have floodways identified, DEP jurisdiction extends 50 feet landward from the top of the stream bank on both sides of the stream.

Answer: *Since the garage is to be located in the floodway identified by FEMA, Mr. Kneidinger must obtain a Water Obstruction and Encroachment Permit from DEP, in addition to complying with all applicable local floodplain management regulations.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contacting your Regional Office using information available at:

www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Floodplain Management Permits

Situation: *The Robinson Borough Water Authority is planning to build a maintenance garage next to its treatment facility. A portion of the garage will extend into the identified floodplain of Muddy Creek. Will a state permit be required?*

Besides requiring permits for obstructions within floodway areas, DEP also has jurisdiction over the development activities of governmental and quasi-public entities occurring within any portion of an identified floodplain area, not just the floodway. By virtue of the Pennsylvania Flood Plain Management Act of 1978, DEP was given the authority to regulate activities conducted by or performed on property owned or maintained by other commonwealth agencies, political subdivisions including local governments, and public utilities when located in a floodplain area. The rules and regulations are set forth in Title 25, Chapter 106 of the Pennsylvania Code.

Answer: *A water authority is a political subdivision, and a portion of the proposed building lies within the identified floodplain area. So, yes, a permit from DEP is needed.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contact your Regional Office using information available at:

www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Wetland Protection

Situation: *ABC Construction Company owns a three-acre swamp next to Hearn Run that it wishes to develop into an equipment storage area. In order to raise the site above the 1% annual chance flood level, the Company will use excavation material from ongoing construction projects to gradually fill the area. All site and building plans comply with the municipality floodplain management regulations. Should you issue the Company a permit?*

Wetlands including bogs, marshes, swamps, and similar areas are environmentally sensitive and, as such, are given special consideration at both the federal and state level. Section 404 of the Federal Clean Water Act authorizes the U.S. Army Corps of Engineers to regulate the discharge of dredged or fill material into the waters of the United States including all adjacent wetlands. Permit applications are reviewed by the Corps of Engineers in cooperation with the Environmental Protection Agency and the U.S. Fish and Wildlife Service and with other technical support agencies, including state agencies. All proposals are assessed for impacts on water quality, flood control, fish and wildlife and ground water recharge, among others.

The Pennsylvania Dam Safety and Encroachment Act of 1978, as currently amended, gives the DEP jurisdiction over encroachments and obstructions into wetlands, as well. Permit applications are reviewed by the Pennsylvania Fish and Game Commissions, River Basin Commissions, and other bureaus within DEP.

Efforts are currently underway to initiate a joint application procedure to make it easier for applicants to seek both federal and state approvals.

Answer: *The filling of the wetland will necessitate a permit from DEP and from the U.S. Army Corps of Engineers. As such, the local permit should be withheld until the necessary permits are secured.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contact your Regional Office using information available at:
www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

There is a U.S. Corps of Engineers District Office serving each of the four major drainage basins of the state. For information concerning Section 404 permits, contact the office serving your area:

Address correspondence to:

**The District Engineer
U.S. Army Corps of Engineers District**

Delaware River Basin

Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

(215) 656-6500
www.nap.usace.army.mil

Ohio River Division

William S. Moorehead Federal Building
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

412-395-7100
www.lrp.usace.army.mil

St. Lawrence Drainage

1776 Niagara Street
Buffalo, New York 14207

(716) 879-4143
www.lrb.usace.army.mil

Susquehanna and Potomac River Basins

City Crescent Building
10 South Howard Street
Baltimore, MD 21201

(410) 962-4223
www.nab.usace.army.mil

Surface Mining Permits

Situation: *Farmer McCall wants to take some sand and gravel from the floodplain of Rocky Run to use as fill in repairing some of his dirt roadways. In applying for a local permit, Mr. McCall asks if any other state or federal permits are required. How would you respond?*

Surface mining activities are regulated by DEP. Surface mining is defined as the extraction of minerals from the earth, from waste or stockpiles, or from pits or banks by removing the material overlying the mineral. Minerals include

limestone, dolomite, sand, gravel, rock, stone, earth fill, slag, iron ore, coal, clay, and others. A person conducting a surface mining operation must obtain a license from DEP, which must be renewed annually. In addition, a mining permit is required to operate a surface mine. To obtain approval to mine a particular property, an applicant must submit a site plan and a reclamation plan showing how the area will be restored when mining is completed.

However, there are exceptions to what is considered surface mining. Most notably, the extraction of minerals by a landowner for his own noncommercial use from land owned or leased by him is not considered surface mining and is, therefore, not regulated under the (Non-coal) Surface Mining Conservation and Reclamation Act.

It is important to note that surface mining is restricted within certain distances of highways, dwellings, schools, public buildings, and other structures. For floodplain management purposes, be aware that surface mining is prohibited within 100 feet from the bank of any stream.

Answer: *If Farmer McCall is mining the sand and gravel for his own use and does not intend to sell any of it, then a mining permit is not required.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contact your Regional Office using information available at:

www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Water Quality Permits

Situation: *The McQuiston Casting Company wants to expand its plant along Wayward Run to house a new refining process complete with a waste treatment facility. The expansion is to be flood-proofed in accordance with local floodplain management regulations. The plant manager wants to proceed as soon as possible. What's the holdup?*

No person, business, or municipality may discharge sewage, industrial wastes, or any other contaminants into the waters of the Commonwealth without obtaining a water quality permit from DEP. Applicants must limit the discharge of pollutants based on the water quality criteria established in Chapter 93 of Title 25 of DEP's Rules and Regulations.

Answer: *Chances are the treatment processes are going to require a discharge into Wayward Run. If so, a water quality permit is needed.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contact your Regional Office using information available at:

www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Earth Disturbance

Situation: *The Wood Development Corporation submits a proposal to develop a 30-acre site for an industrial park. A portion of the area is located along the floodplain of Spangler Creek and will be kept in open space in compliance with local floodplain management regulations. Is there any reason not to issue a permit?*

The Erosion Control Regulations of Title 25, Chapter 102 of the Pennsylvania Code requires any person engaging in earthmoving activities that will affect 25 acres or more to obtain an earth disturbance permit through the County Conservation District. A permit application must be accompanied by an erosion and sediment pollution control plan which describes those measures that will be used to curb soil erosion and resulting sedimentation. Although earth disturbance permits are not required for activities of fewer than 25 acres or for the plowing and tilling for agricultural

purposes, an applicant for a building permit, nevertheless, must have an erosion and sediment pollution plan prepared and take all the measures necessary to prevent erosion and sedimentation.

Answer: *If 25 acres or more are to be disturbed, then the Wood Development Corporation must secure an earth disturbance permit from the County Conservation District.*

To obtain permit applications or further information, contact your County Conservation District using information available at: <http://pacd.org/your-district/find-your-district/>.

Sewage Permits

Situation: *The Keptners decide to build a second home on a five-acre wooded tract along the floodplain of Babbling Brook, an area not served by the regional sewage system. The building permit application shows the lowest floor being well above the 1% annual chance flood elevation, and everything else appears to be in accordance with the floodplain ordinance. Should a permit be issued?*

According to Act 537, better known as the Pennsylvania Sewage Facilities Act, no one may alter, construct, or install an individual sewage system or community sewage system without first obtaining a permit from a local agency authorized by DEP to issue such permits. A sewage enforcement officer (SEO) appointed by the local sewage enforcement agency and certified by DEP is responsible for issuing sewage permits in accordance with the rules and regulations adopted by DEP, which are contained in Title 25, Chapter 73 of the Pennsylvania Code.

An on-lot system cannot be flood-proofed and, therefore, is particularly vulnerable to damage by flood waters. In addition, the potential for release of pollutants from the treatment tank is always present. Consequently, paragraph 73.12 of DEP's Regulations prohibits the issuance of sewage permits within identified floodways, on floodplains, or in flood-prone soils. In many instances, the sewage regulations, not local floodplain regulations, are the deciding factor in determining whether a flood-prone property can be developed.

Answer: *A habitable dwelling requires some form of sewage disposal that, in turn, must be approved by the local Sewage Enforcement Officer. It may be that the applicants will have difficulty obtaining a sewage permit for the installation of an on-lot system if the entire tract is flood-prone. In any event, a building permit should not be issued until the sewage permit is obtained.*

DEP permits may be started using the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or by contact your Regional Office using information available at: www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

Labor and Industry – Flammables and Combustibles (F&C) Regulations

Situation: *An application is submitted for the installation of a 1,000-gallon underground gas tank at the Punch Village Nursery located next to Hazard Creek. Since the local floodplain management regulations do not address underground structures, there is no reason to not issue a permit, or is there?*

Within the Department of Labor and Industry, the Flammables and Combustibles Liquids (F&CL) Section is responsible for regulating the outside supply or storage of flammable and combustible liquids having a flash point below 200 F. These liquids include gasoline, naphtha, kerosene, fuel oil, and other similar substances. Anyone maintaining a supply or storing 30 gallons or more, whether above or below ground, must file an application with the F&CLS of the Department of Labor and Industry and comply with all the location, design, construction, installation, and maintenance standards and all other requirements of Chapters 11, 13, and 14 of Title 37 of the Pennsylvania Code.

The F&CL regulations do not apply to Philadelphia and Allegheny Counties or to liquids and facilities at **refineries**. The regulations include a section establishing standards for the installation of tanks in areas of high ground water tables and

in areas subject to flooding. In addition, there are minimum setback distances for property lines and public ways (including watercourses), which must be maintained depending on the type of tank.

Answer: *Gasoline is a combustible and flammable liquid as defined by the Department of Labor and Industry Regulations. The installation of a 1,000-gallon tank, whether above or belowground, must be approved by the Flammable and Combustible Liquids Section.*

For applications or more information, contact:

PA Department of Labor and Industry
Bureau of Occupational and Industrial Safety, Flammable and Combustible Liquids Section
651 Boas Street, Room 1614
Harrisburg, Pennsylvania 17121

(717) 705-2787

The DEP also regulates supply and storage tanks for Flammable and Combustible Liquids. For details on the DEP requirements, please use the DEP Permit Application Consultation Tool at www.ahs.dep.pa.gov/PACT or contact your Regional Office using information available at:

www.portal.state.pa.us/portal/server.pt/community/about_dep/13464/office_locations/585263

XII. Planning Assistance from DCED

DCED's Governor's Center for Local Government Services (Center) provides a full range of technical and financial services to all of Pennsylvania's local governments. The Center is the principal state agency responsible for helping with planning and land use matters discussed in this publication.

Local government officials, planners, and other interested individuals have several sources of assistance from the Center:

- **Toll-free telephone number** – 888-223-6837. Callers will be connected with staff that has knowledge of planning, land use, zoning, subdivision and land development, and the PA Municipalities Planning Code.
- **Website** – dced.pa.gov/lgs. There are helpful pages under Community Planning, plus information on the topics listed below.
- **Publications** – dced.pa.gov/publications. This and the other nine Planning Series publications listed in the Preface can be downloaded and printed for free, or hard copies can be purchased at cost. The website also has publications with suggested provisions for floodplain management ordinances, plus publications on many topics from fiscal management to intergovernmental cooperation to open meetings.
- **Training** – PAtraininghub.org. DCED provides funding for local government training programs via the PA Local Government Training Partnership. There are training courses, videos, and online instruction on a variety of topics, including planning and land use, plus ten fact sheets on planning and land use topics.
- **Land use law library** – www.landuselawinpa.com. DCED and the PA Local Government Training Partnership maintain an online library of significant court cases on zoning, subdivision and land development, and other land use topics.
- **Planning and land use eLibrary** – <http://elibrary.pacounties.org>. DCED and the County Commissioners Association of Pennsylvania maintain an online library of comprehensive plans, zoning ordinances, and subdivision and land development ordinances in effect in Pennsylvania counties, cities, boroughs, and townships.
- **Financial assistance** – dced.pa.gov/program. Currently DCED provides funding for local government planning through the Municipal Assistance Program. MAP offers up to 50 percent grants for costs of undertaking comprehensive plans, zoning ordinances, subdivision and land development ordinances, and more.

XIII. Other Planning Assistance

Assistance and training on planning and land use are available from other sources:

- **County planning agencies** – Pennsylvania counties have a long tradition of being a source of capacity and expertise in planning and land use. Currently, every county has a planning commission, department, or both, or other agency like a development department that handles planning matters. Every county has staff involved in planning. Many county planning agencies offer assistance to local governments in their counties.
- **American Planning Association (APA)** – The Pennsylvania Chapter has an annual conference with many speakers and sessions on topics from local to national interest, plus training workshops and other educational events and information: <http://planningpa.org>. The national organization has an annual conference, publications, and a variety of audio, web, and e-learning resources: www.planning.org.
- **Local government associations** – In addition to programs through the PA Local Government Training Partnership, Pennsylvania's statewide associations representing different categories of local governments also offer annual conferences and training programs, including planning and land use, to their member local governments.
- **Penn State Extension** – Statewide Extension programming includes courses, webinars, and publications on community issues including planning and land use. Within that is the Pennsylvania Municipal Planning Education Institute which offers training programs on planning, zoning, and subdivision and land development: <http://extension.psu.edu/community>.
- **Universities and colleges** – Several Pennsylvania universities and colleges offer degree programs in planning. Others offer planning-related courses in geography or design degrees. Many have a community service objective and assist community groups and local governments with faculty and/or student service projects.

**Pennsylvania Department of Community & Economic Development
Governor's Center for Local Government Services**

Commonwealth Keystone Building
400 North Street, 4th Floor
Harrisburg, PA 17120-0225

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